June 29, 1965 A. W. McCLAY, JR 3,191,203

SCULLING SUPPORT FOR AN OAR

Original Filed May 15, 1961 5 Sheets-Sheet 1

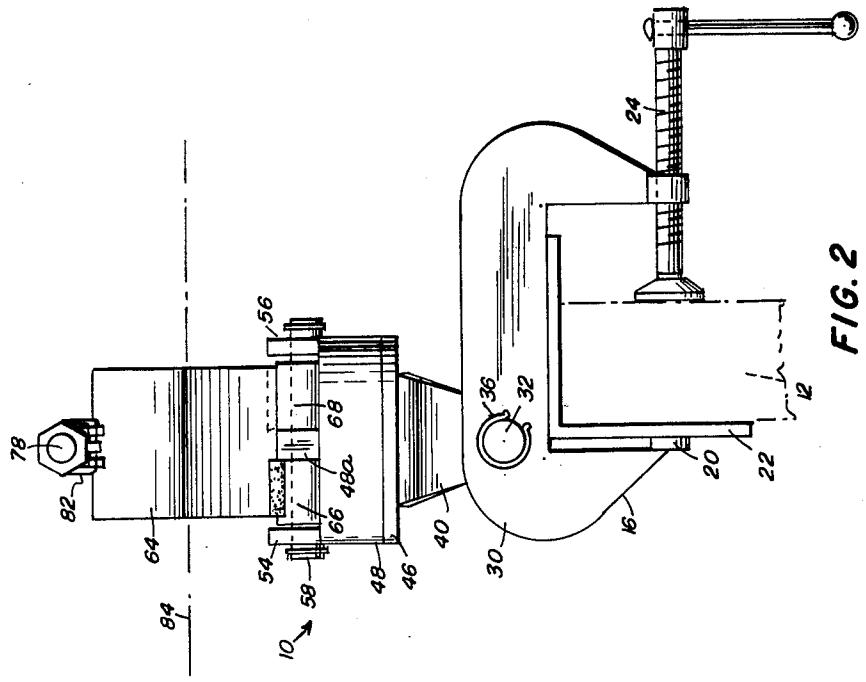


FIG. 2

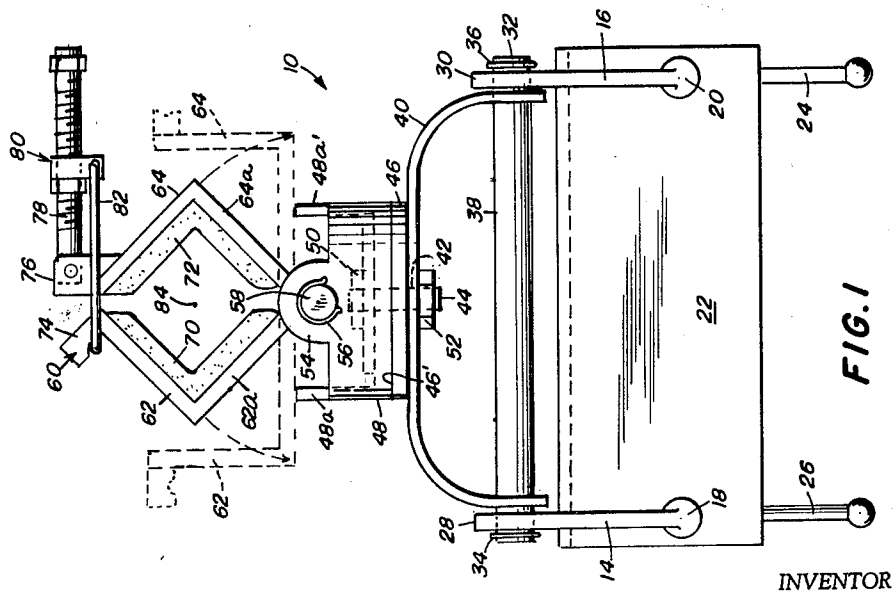


FIG. 1

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SCULLING SUPPORT FOR AN OAR

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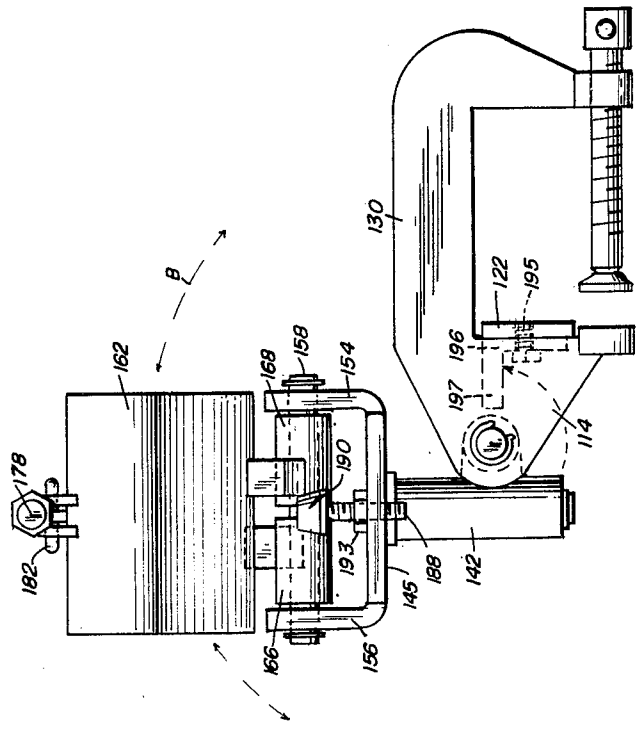


FIG. 4

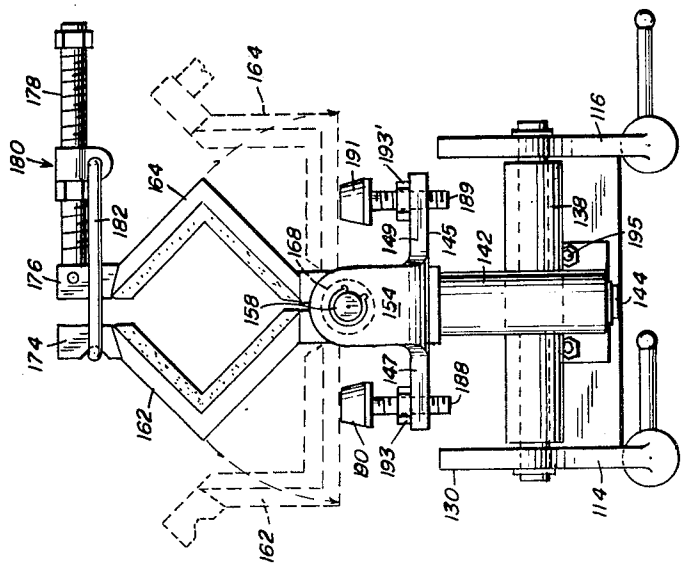


FIG. 3

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SCULLING SUPPORT FOR AN OAR

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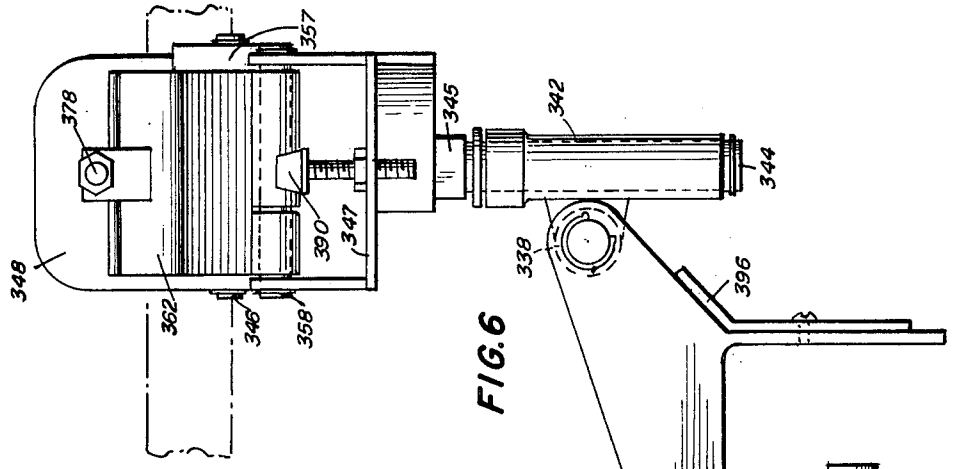


FIG. 6

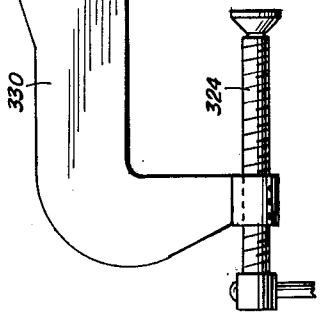


FIG. 5

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SCULLING SUPPORT FOR AN OAR

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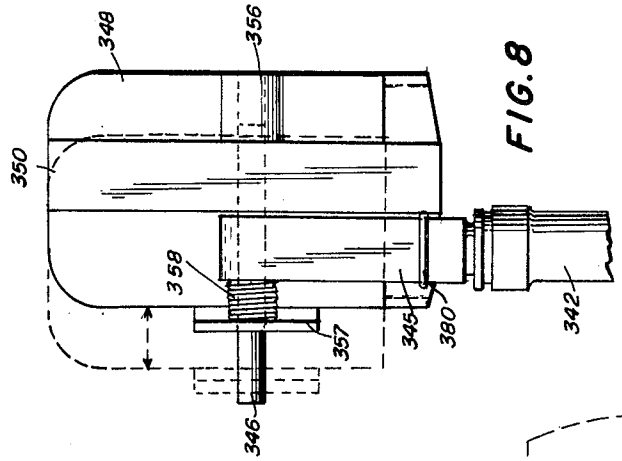


FIG. 8

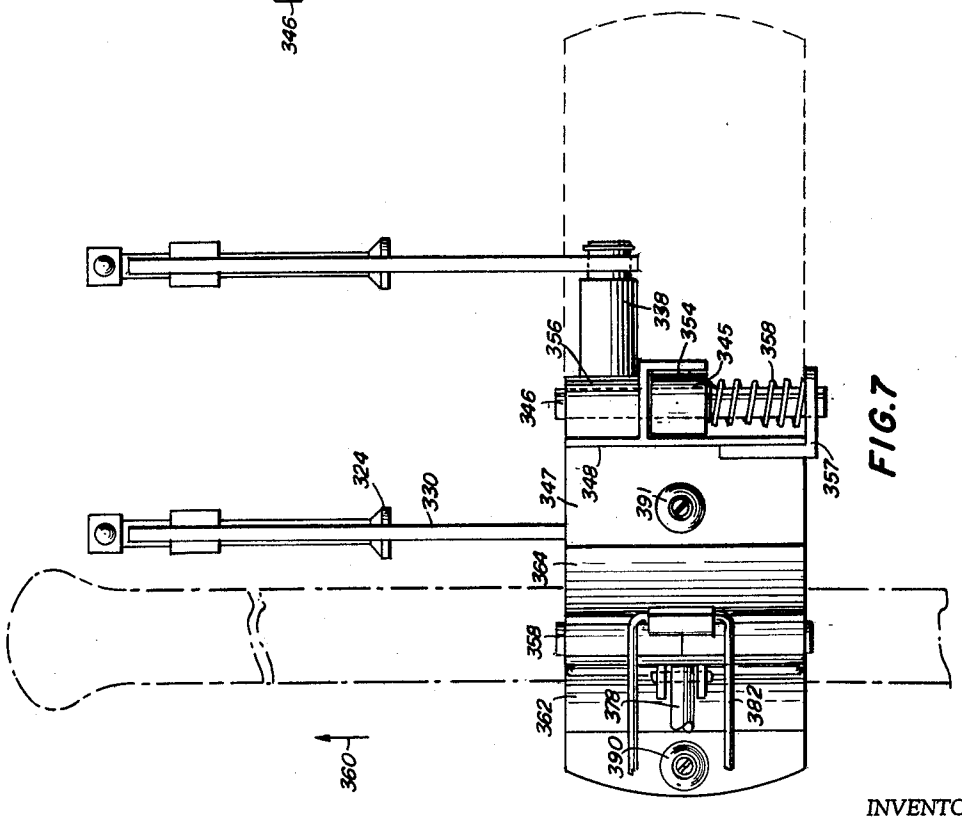


FIG. 7

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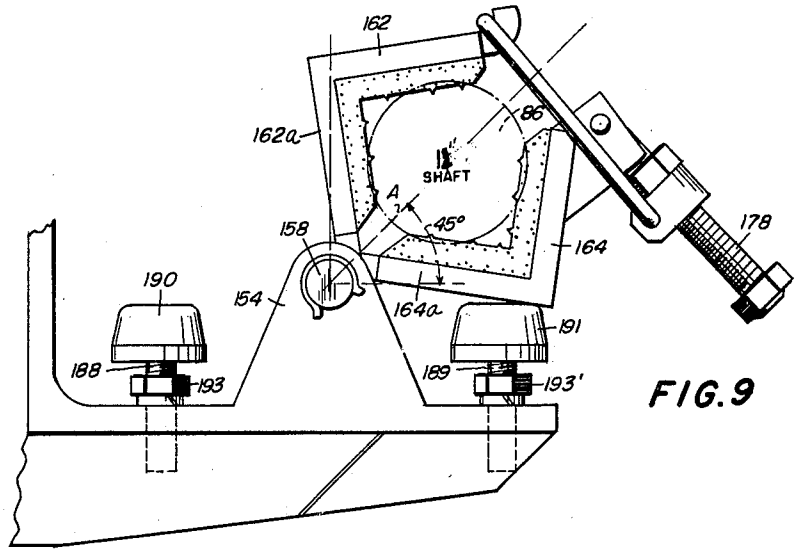


FIG. 9

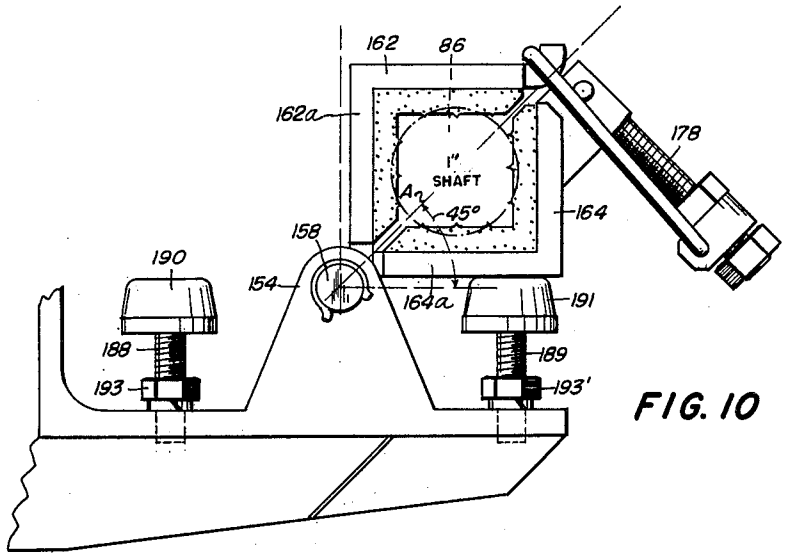


FIG. 10

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United States Patent Office 3,191,203 Patented June 29, 1965

3,191,203

SCULLING SUPPORT FOR AN OAR

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Continuation of application Ser. No. 109,994, May 15, 1961. This application Nov. 4, 1963, Ser. No. 322,275
18 Claims. (Cl. 9—26)

This is a continuation of application Serial No. 109,994, filed May 15, 1961, now abandoned.

This invention apertains to an improvement in a support for a manually operated propulsion means for small boats generally, and more specifically relates to an apparatus for supporting a paddle such that an oscillating movement transmitted to the paddle, about the support, automatically causes a proper feathering movement therein, as in sculling.

One object of the present invention is to provide such a support wherein the proper feathering and pitch attitude can be readily selected and adjusted for particular circumstances.

Another objective of the invention is to provide a self-feathering sculling device, simple in construction and of sufficient durability to withstand the particularly difficult environments in which it is to be used.

A further objective of one embodiment of the invention is to provide a device permitting a folding of parts whereby the device may be conveniently transported and stored in conventional tackle boxes and the like.

One principal objective of the invention is to provide means whereby the operator may effect reversal of the craft's movement with one simple motion, accomplished by a single hand.

A still further objective of this invention is to provide means whereby adjustments may be made in the working angle at which the paddle enters the water to account for the varying slopes of the transoms on different crafts, and idealize efficiency.

A further objective of the invention is to provide adjustment means whereby the pitch angles of the paddle or oar may be adjusted for the particular transverse pitch of the boat caused by the over-weighting of one side of the boat by personnel or other equipment, the device being mounted in a laterally sloped position due to the crown of the transom, list of the boat or other reasons.

A still further objective of the invention is to provide an apparatus of the type described wherein the desired movement transmitted or imparted to the paddle can be accomplished by an unskilled operator with the use of one arm, even though that operator may be in an awkward position and unable to observe the movement imparted.

A still further objective of the invention is to provide an improved sculling support which will positively secure an oar or paddle in a selected position, but which may be instantly released and adjusted when it is desired to alter the direction of thrust created by the opposing pitch angles of the blade.

A still further very important objective of this invention is to provide a paddle support which, when removed from the boat, does not require any permanent or semi-permanent structures to be left on the boat or paddle. Prior art supports which require clamps to remain on the oar when not used with the support, have a serious disadvantage in that the oar has other independent uses.

A further objective of the invention is to provide a support means wherein the paddle is securely supported to the boat, substantially outside thereof, but in a position for instant use by the boat occupant.

With the foregoing objects outlined and with other objects in view, which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:

FIG. 1 is an elevational view of one embodiment of the invention;

FIG. 2 is a side view thereof;

FIG. 3 is an elevational view of another embodiment of the invention;

FIG. 4 is a side view of the FIG. 3 embodiment;

FIG. 5 is an elevational view of still another embodiment of the invention showing a second position in dotted lines;

FIG. 6 is a side view of the FIG. 5 embodiment;

FIG. 7 is a plan view of the FIG. 5 embodiment; and

FIG. 8 is an enlarged partial end view of FIG. 7 showing the initial movement necessary before swinging the paddle-holding assembly to a position reversing the direction of thrust given by the paddle; and

FIGS. 9 and 10 are diagrammatic showings of the cooperation between the several adjustment means.

Referring now to the drawings, wherein like numerals indicate like parts, the numeral **10** indicates the support structure of this invention. The structure is secured to a transom or stern **12** by way of two spaced parallel C-clamps **14** and **16**. The abutting jaws **18** and **20** of the C-clamps are joined by a flat connecting bar **22**. Opposing the bar **22** are a pair of conventional threaded clamp screws **24** and **26**.

As seen best in FIG. 2, the transom **12** is securely grasped between bar **22** and screws **24** and **26**. For ease of description, the transoms in all embodiments are shown as straight and vertical. Of course, most small craft have a sloping transom. However, it will be apparent to those skilled in the art that from the following description the support will operate on sloping and/or bowed transoms.

The base legs **28** and **30** of the C-clamps **14** and **16** respectively, are journaled to receive a horizontally disposed support pin **32** therebetween. The pin **32** may be kept in position through the use of conventional exterior snap rings **34** and **36**. This pin is parallel to the top edge of the transom and therefore under normal conditions is transverse to the direction of travel and parallel to the water surface.

A sleeve **38** receives the pin **32** between the C-clamps and rotatably supports an inverted U-shaped bracket or frame **40**. Of course, pin **32** can be journaled in bracket **40** without the use of sleeve **38**. The bracket is journaled at **42** midway of its length to receive a pin **44**. An apertured circular bearing plate **46** is secured to the bracket and is provided with a flat upper bearing surface **46'**. Received on the bearing surface is an annular framing bracket **48** which taken in conjunction with bracket **40** constitute frame means. The pin **44** is journaled through each of these last mentioned members and has each of its ends threaded so as to receive nuts **50** and **52**, such that the members may be secured with respect to each other. The pin **44** provides an axle about which the framing bracket **48** rotates with respect to surface **46**.

A pair of integral upright opposing lugs **54** and **56** are spaced about the top surface of annular bracket **48**. The lugs have opposing journals to receive a third pin **58** which pivotally supports a paddle clamp **60**. The paddle clamp is comprised of a pair of angle irons **62** and **64** respectively having depending sleeves **66** and **68** rotatably mounted about the pin **58**. Therefore, the gripping irons **62** and **64** are hingedly secured to the pin **58**.

The inner surfaces of the angle irons are respectively coated with resilient linings **70** and **72** and on their ends, opposite sleeves **66** and **68**, have a lug **74** and a yoke **76** extending therefrom. The yoke **76** pivotally supports a threaded pin **78** of the adjustable toggle mechanism **80**.

As will be understood, the retaining strap **82** of the toggle mechanism may be released from lug **74** by merely swinging pin **78** counter-clockwise, as viewed in FIG. 1, and swinging the strap above the vicinity of the lug.

For purposes of clarity, FIGS. 1 and 2 have been shown with the bracket **40** substantially in the same plane as transom **12**. In this position a paddle grasped between the clamping members **62** and **64** would be substantially parallel to the water surface. In use, of course, the bracket **40** would be pivoted counter-clockwise as seen in FIG. 2 until a paddle supported along the central axis **84** of the paddle clamp assumes any position from 20° to vertical with respect to the water surface.

In operation, an oar is secured between the clamping members **62** and **64** with its longitudinal axis substantially coincident with the longitudinal axis **84**. The blade end of the oar (to the left in FIG. 2) may be dipped into the water by pivoting bracket **40** counter-clockwise about axis **32**. As a back and forth motion is imparted to the paddle (not shown) from the handle end thereof, the paddle will oscillate about pin **44** through bearing surfaces **46** and **48**, and rock from side to side about the pin **58**. Therefore, as will be apparent to those skilled in the art, as the paddle pivots about pin **44** the rocking motion about pin **58** will position the blade in the water so that forward thrust is achieved in each direction by having the opposing blade surfaces pushing the water rearwardly as the oar is moved thwartwise.

In the embodiment shown in FIGS. 1 and 2, the rocking motion about **58**, is limited by the top surfaces of lugs **48***a* and **48***a'* at points spaced 90 degrees from lugs **54** and **56**. Excellent performance is accomplished in this embodiment by the large bearing surfaces between bearing plate **46** and bracket **48**.

In review, it can be seen that between the point of attachment to the boat and the paddle clamp there is a first axis (pin **32**) of rotation transverse to the direction of travel, a second axis of rotation (pin **44**) normal to said first axis, and a third axis (pin **58**) normal to said first and second axes. The working angle at which the paddle is received in the water is accomplished by rotation about the first axis, the length of stroke is determined by the amount of rotation about the second axis, and the reverse pitch on alternate strokes is accomplished through the rotation about the third axis. The opposing pitch angles desired in the blade of the paddle, of course, is varied by rotating the paddle about its longitudinal axis prior to securing the toggle assembly. The placing of pivot **44** between the pivot **32** and the pivot **58** provides an arrangement whereby the pitch remains constant for any angle of operation at which the oar enters the water.

Another embodiment of the invention is shown in FIGS. 3 and 4. Basically, the operation is the same as that described for FIGS. 1 and 2 with the exception that the bearing plate and annular brackets **46** and **48** have been replaced with a pin and sleeve assembly, and a pair of leg members have been added to support a pair of adjustable resilient stops.

Corresponding even numbered numerals in the one-hundred series are used on FIGS. 3 and 4 to designate elements substantially identical to those previously described. Those elements wherein the embodiment differ are designated by odd-numbered numerals. In this embodiment a pair of C-clamps **114** and **116** support a pin **132** journaled therebetween. Rotatable about the pin **132** is a sleeve **138** having a bracket sleeve of frame **142** welded thereto at right angles to pin **132**. Rotatably received within sleeve **142** is a pin **144** terminated at its upper end by a yoke **145** having opposing upright lugs **154** and **156**. Pin **144** supports, at a point above sleeve **142**, a pair of horizontally extending legs **147** and **149**. Supported between lugs **154** and **156** is a pin **158** which supports a pair of angle iron jaw clamp members **162** and **164**. The sleeve or frame **142** together with the lugs **154** and **156** and C-clamps **114** and **116** constitute frame means

for supporting the paddle clamping structure. In all material respects the clamp and toggle means are similar to the corresponding clamps in the FIGS. 1 and 2 embodiment.

This device is uniquely suitable as a safety device. In the event one of a pair of oars is lost, or in the event of a power failure in a motor driven boat, a single oar can be used to propel an operator over long distances without tiring. The support is easily stored and transported. Referring to arrow B in FIG. 4, it can be seen that the oar clamping structure can be folded to a position in between C-clamps **114** and **116**.

A pair of threaded screws **188** and **189** are threadedly received at right angles by legs **147** and **149** respectively. A pair of resilient stops **190** and **191** are attached to the upper surface thereof. FIGS. 9 and 10, drawn to scale, show the importance and cooperation between the adjustable toggle mechanism and the adjustable stops **190** and **191**. This combined structure permits the support to accept oars having varying diameters while maintaining correct pitch settings. FIG. 9 shows a paddle having a 1¼ inch diameter, and FIG. 10 shows a paddle having a 1 inch shaft. Assuming that a pitch setting of 45 degrees were desired in each instance, the differences in FIGS. 9 and 10 show the relatively great amount of adjustment necessary. The elongated screw **178**, in cooperation with the elongated pins **188** and **189**, permits this wide range of adjustment. It is apparent that if stops **190** and **191** were not adjustable, the pitch angle of the paddle would vary considerably when using paddles with only slightly different diameters. Variation in shaft size is true of oars to an even greater extent due to various lengths of oars and consequent differences in shaft sizes, taper of shafts and its effect as to varying diameters along length of shaft at which lock might be attached and to manufacturing differences. Also the tapered shafts of oars, and the point along the shaft at which operators might clamp it will cause variations. The height of stops **190** and **191** are adjustable by rotating the screws the proper amount. This provides a means to limit the amount of rocking in the clamp members in a particular navigational circumstance. For instance, if the craft is tilted about its longitudinal axis, due to the operator sitting near the port or starboard side, the stops may be individually raised or lowered to vary the pitch angles sufficiently to oppositely impart an equal thrust on both the back and forth strokes of the paddle. In order to impart the proper pitch angles to the oar, the shaft clamps are loosened and the paddle is rotated somewhat. This is easily accomplished by merely raising the toggle latch slightly, adjusting the pitch, and returning the toggle to its lock position. With leg **164***a* of the clamp member **164** resting against adjustment stop **191**, the plane of the paddle blade can be made to be in the same plane (45° to the desired direction of travel) as line A as shown in FIG. 9. A pair of locking nuts **193** and **193'** are provided to secure the stops at selected heights.

For a less tiring operation, the invention provides structure whereby the working angle at which the paddle is used or stroked will remain substantially constant. This advantage is obtained by mounting an adjustable lug on the C-clamp assembly to engage the bottom portion of the sleeve **142** and thereby limit its rotation about pin **132**. The abutment relation relieves the operator from the necessity of overcoming the upward or rearward tilt of the paddle occasioned by the blade being urged in a direction under the boat, e.g., the direct result of the forward thrust itself.

For these purposes the bar **122** is apertured between the C-clamps to receive one or more locking screws **195**. The locking screws secure an angle iron **196** to plate **122**. The angle piece **196** has a stop lug **197** extending outwardly therefrom. As can be seen by referring to FIG. 4, the bottom of sleeve **142** strikes lug **197** as the support assembly is pivoted about the pin **132**. The relative

height of the lug will determine the amount of pivoting permitted. A selection is permitted by providing a plurality of apertures at different heights along leg **196**. Since the bulk of the weight of the oar is to the left, as viewed in FIG. 4, and due to the resistance of the water (forward thrust of paddle blade) during the sculling stroke, the normal position of sleeve **142** will be against the lug **197**.

Another embodiment of the invention is shown in FIGS. 5 through 8. In this embodiment the structure between the C-clamps **314** and **316** and sleeve or frame **342** is substantially identical functionally to that shown in FIGS. 3 and 4. An arrangement of an adjustable stop lug **396** to contact sleeve **342** is provided which is similar to the functioning of stop lug **197**. Likewise, the paddle clamping jaws **362** and **364** and the toggle assembly **380** are identical to that of previous embodiments. However, the third embodiment provides an L-shaped bracket whereby the oar support assembly may be turned upside down (approximately 180°) thereby reversing the thrust of the paddle blade from forward to rearward without making any adjustment of the paddle within the locking jaws.

The identical structural elements from the C-clamps to the second rotatable sleeve, and from the rocking pin to the adjustable stop lug have been designated by similar numerals in the three hundred series. The remaining numerals odd or even are applied independently of the previous embodiments.

In this embodiment the rotatable pin **344**, extends above sleeve **342** in the form of an arm **345** having a squarish cross-section. At its upper end, the arm **345** is apertured at **343** and fixedly receives a pin **346**.

An L-shaped bracket is comprised of two legs **347** and **348**. The sleeve or frame **342**, along with the arm **345** and leg **347** comprise frame means for supporting the paddle clamping structure. Leg **347**, as best seen in FIG. 5, directly supports the paddle clamping structure and adjustable stops which are operatively identical to the FIGS. 3 and 4 embodiments. A length of angle iron **350** is welded along the longitudinal length of the leg **348**, and forms therewith a channel pocket **354** to receive the arm extension **345**.

A lug **357** is secured to the lateral edge of the leg **348** and is apertured to slidably receive the pin **346**. Angle iron **350** has a mating aperture in plate **351** to also receive the pin. A journal **356** is provided to reinforce this last mentioned aperture. As seen best in FIG. 7, angle iron **350** and lug **357** are spaced a sufficient distance from each other to permit arm **345** to slide out of pocket **354**. A coil **358** around pin **346**, between the arm and one lug, is provided to spring bias the arm into the channel **354**.

The force necessary to overcome bias of spring **358** can be transmitted to the L-shaped bracket **347** by merely exerting a pulling force on the paddle in the direction of arrow **360** in FIG. 7. When the solid line position (FIG. 8) of leg **348** is reached (spring **358** compressed) bracket **347** is free to rotate about pin **346**. When arm **345** is aligned with pocket **354**, the force is released and the spring will again urge the arm into the pocket. The L-shaped bracket **347** will then be in the dotted line position of FIG. 5. Thus it may be appreciated that the structure of FIG. 5 actually presents a two-section frame for the paddle clamping structure wherein one section is comprised of the transom clamping structure **330**, and the sleeve or frame **342** with the other section being that structure directly supporting the paddle clamp pivot axis **358**.

In this dotted line position, the operation of the support will be the same as before with the exception that the blade surface of the paddle will work oppositely as in the full line position. Therefore, the craft's direction of travel is reversed when a similar motion is imparted to the paddle. A resilient band **380'** is provided to reduce noise of changeover from forward to reverse position of bracket, e.g. bracket impacting against pin **345** by keeping a snug fit between the pocket **354** and the arm **345**.

From FIG. 5 it may be seen that the paddle clamp axis at the center of jaws **362** and **364** and the paddle clamp pivot axis **358** reverse their positions relative to the boat to provide the forward and rearward traveling motion. It may be appreciated that the structure of FIG. 6, when in operative relation with the pin **344** against the thrust abutment **396**, deploys the paddle clamp axis in a direction outward of the paddle clamp pivot axis **358** for forward motion and in a direction inboard of the pivot axis **358** for rearward motion (as seen in dotted outline in FIG. 5).

As used herein, the "feathering angle" is the total angle through which the blade rocks and has to do with thrust obtained versus effort expended, and is determined by shaft size and position of stops **190** and **191**. The "pitch angles" are those two angles (could not conceivably be exactly equal) formed by the plane of the blade (when rotatably positioned with its clamp against stop **190** or **191**) and a plane through the center-line of the paddle and normal to a vertical plane through the longitudinal center-line of the boat. The two pitch angles are adjusted by slightly rotating paddle shaft within its clamp (**162**, **164**) which adjustment increases one pitch angle while decreasing the other and in so doing controls direction of thrust. Thus, when the paddle support is offset from the center-line of the boat (as it invariably will be), the pitch angles will be varied to direct the thrust toward the center of resistance of the boat.

While I have shown and described what is thought now to be the preferred forms of this invention, yet it is apparent that the same are susceptible of other embodiments and combinations. Therefore, it is to be understood that the foregoing disclosure is to be regarded as illustrative only and that it is not my intention to limit myself to the particular embodiments and combination shown except as hereinafter claimed.

I claim:

1. A paddle support for securing a paddle to a boat for a sculling operation, comprising in combination a base for attachment to the stern of said boat, a frame, first pivot means pivotally mounting said frame on said base for movement about a first axis, a paddle holder, second pivot means pivotally mounting said holder on said frame for movement about a second axis normal to and offset from said first axis; said paddle holder including a paddle clamp and a third pivot means pivotally mounting said clamp on said holder for movement about a third axis at right angles to said second axis and said first axis, means for adjusting the paddle clamp to accommodate various size paddle shafts, said paddle holder including independently adjustable means for limiting the degree of clamp pivoting about said third axis and compensating for adjustment of the paddle clamp to maintain equal feather angles for the various size shafts accommodated.

2. A paddle support for securing a paddle to a boat for propelling the boat through the water comprising in combination a base, means for detachably securing said base to the stern of said boat, a frame, first pivot means pivotally mounting said frame on and centrally of said base for movement about a substantially horizontal first axis transverse to the direction of propulsion, a paddle holder means, second pivot means pivotally mounting said holder means on and centrally of said frame for movement about a second axis at right angles to said first axis; said paddle holder including a paddle clamp and a third pivot means pivotally mounting said clamp on and centrally of said holder means for movement about a third axis at right angles to said second axis and said first axis, said second pivot means including adjustable means for limiting the degree of pivoting about said third axis.

3. A paddle support for securing a paddle to a boat for a sculling operation comprising a base, a frame, first pivot means pivotally mounting said frame on said base for movement about a first axis, a paddle holder, second pivot

means pivotally mounting said holder on said frame for movement about a second axis at right angles to said first axis; said paddle holder including a paddle clamp, a bracket, and third pivot means pivotally mounting said clamp on said bracket for movement about a third axis at right angles to said second axis and said first axis; said second pivot means including reversing means, and locking means for fixing said bracket to said second pivot means for movement therewith in a forward position on one side of said second pivot means and in rearward position on the other side of said second pivot means.

4. A paddle support for securing a paddle to a boat for a sculling operation comprising a base, a frame, first pivot means pivotally mounting said frame on said base for movement about a first axis, a paddle holder, second pivot means pivotally mounting said holder on said frame for movement about a second axis at right angles to said first axis; said paddle holder including a paddle clamp, an L-shaped bracket, and third pivot means pivotally mounting said clamp on one leg of said L-shaped bracket for movement about a third axis at right angles to said second axis and said first axis; said second pivot means including pivot means on the other leg of said bracket having an axis parallel to said third axis and intersecting said second axis; and means for locking said bracket to said second pivot means for movement therewith in a forward position on one side of said second pivot means and in rearward position on the other side of said second pivot means.

5. A paddle support for securing a paddle to a boat for a sculling operation comprising a base, a frame, first pivot means pivotally mounting said frame on said base for movement about a first axis, a paddle holder, second pivot means pivotally mounting said holder on said frame for movement about a second axis at right angles to said first axis; said second pivot means comprising a shaft rotatable about said second axis; an arm longitudinally extending from said shaft, an L-shaped bracket, a first leg of said bracket connected to said arm, a second leg of said bracket, a paddle clamp, third pivot means pivotally mounting said clamp on said second leg for movement about a third axis at right angles to said second axis and said first axis; said second pivot means including a further axis pivot means pivotally mounting said first leg on said arm on an axis parallel to said third axis and intersecting said second axis, and means for holding said first leg against said arm for movement therewith in a forward position on one side of said second pivot means and in rearward position on the other side of said second pivot means.

6. A paddle support for sculling operations comprising, a base for attachment to the stern of a boat, a frame, first pivot means pivotally mounting said frame on said base for movement about a horizontal first axis, substantially parallel to said stern, a paddle holder means, second pivot means pivotally mounting said holder means on and centrally of said frame for movement about a second axis at right angles to and offset from said first axis; said paddle holder means including a paddle clamp and a third pivot means pivotally mounting said clamp on and centrally of said holder means, means for adjusting the paddle clamp to accommodate various size paddle shafts, adjustable means against which the clamp abuts to compensate for any adjustment of the paddle clamp whereby equal feather and pitch angles are obtained with the same paddle orientation regardless of paddle shaft size.

7. A support for a paddle adapted for sculling comprising a paddle clamp; frame means supporting the paddle clamp for universal movement relative to a boat to be propelled through first, second and third pivot axes; a thrust abutment for the frame means adjustably fixed relative to the boat to limit the universal movement about the first pivot axis; said frame means mounting the paddle clamp for movement about the second pivot axis in a plane normal thereto; and said second pivot axis being disposed at an angle less than 90° to the water in the limited position to cause said plane to intersect the water whereby the paddle movement is confined to said plane thereby transmitting thrust to the boat.

8. A support for a paddle adapted for sculling comprising a paddle clamp adapted to grip a paddle; a two-section frame means capable of providing universal movement through a plurality of axes including a paddle clamp pivot axis and adapted for attachment at one section thereof to a boat to be propelled, the other section of the frame means supporting the paddle clamp with the paddle axis in a direction outboard of said pivot axis; and means permitting reversal of the other section of the frame to deploy the clamp with the paddle axis in a direction inboard of said pivot axis.

9. A support for a paddle adapted for sculling through push and pull strokes comprising a paddle clamp; frame means for supporting the paddle clamp for universal movement relative to a boat to be propelled including an axis about which the paddle clamp is pivotable; separate means carried by the frame means to abut the clamp for establishing separate positions on opposite sides of the axis for the clamp for the push and pull strokes, respectively; said separate means being independently adjustable to provide control of the blade angle of the paddle.

10. A support for a paddle adapted for sculling through push and pull strokes comprising a paddle clamp; frame means supporting the paddle clamp for movement relative to a boat to be propelled with respect to three mutually orthogonal axes including an axis about which the paddle clamp is pivotable; separate adjustable stop means interposed between the frame means and the clamp for establishing separate spaced apart positions on opposite sides of the axis for the clamp for the push and pull strokes respectively.

11. A support for a paddle adapted for sculling through push and pull strokes comprising a paddle clamp; said clamp including a pin and a pair of paddle gripping irons hingedly supported by the pin; frame means for supporting the paddle clamp at the pin for movement relative to a boat to be propelled about three mutually orthogonal axes including an axis through said pin about which the paddle clamp is pivotable; and means for establishing frame means to clamp spacing at separate positions on opposite sides of the axis for the clamp for the push and pull strokes respectively.

12. A support for a paddle adapted for sculling through push and pull strokes comprising a paddle clamp; frame means for supporting the paddle clamp for universal movement relative to a boat to be propelled including an axis about which the paddle clamp is pivotable to separate positions on opposite sides of the axis for the clamp; separate adjustable stop means for adjusting the position of the clamp in each of said separate positions to provide control of the blade angle of the paddle.

13. A support for securing a paddle to a boat for sculling through push and pull strokes comprising a paddle clamp; frame means supporting the paddle clamp for sculling movement relative to a boat to be propelled; separate means carried by the frame means to abut the clamp for establishing separate spaced apart positions for the clamp for the push and pull strokes, respectively; a thrust abutment for the frame means to limit the movement in the longitudinal direction of the boat, whereby the movement of the paddle axis through the water is limited to a plane transverse to the boat and fixedly spaced therefrom, thereby transmitting the force component in the direction of the boat to the boat.

14. A support for securing a paddle to a boat for sculling through push and pull strokes comprising a paddle clamp; frame means supporting the paddle clamp for movement relative to a boat to be propelled about three mutually orthogonal axes; separate means carried by the frame means interposed between the frame means and the clamp for establishing separate spaced apart positions relative to one of said axes for the clamp for the push

and pull strokes, respectively; a thrust abutment for the frame means to limit the movement in the longitudinal direction of the boat about another of said axes; said frame means limiting the movement of said one of the axes to a plane normal to the third one of said axes to confine the movement of the paddle axis through the water to said plane transversely of the boat and fixedly spaced therefrom as determined by the thrust abutment, thereby transmitting the force component in the direction of the boat to the boat.

15. A support for securing a paddle to a boat for sculling through push and pull strokes comprising a paddle clamp; frame means supporting the paddle clamp for limited universal movement relative to a boat to be propelled; separate means interposed between the frame means and the clamp in abutting relation thereto for establishing separate spaced apart positions for the clamp for the push and pull strokes, respectively; a thrust abutment for the frame means to limit the movement in the longitudinal direction of the boat; said frame means confining the paddle clamp movement to a plane transverse of the boat while the paddle is in the water and spaced therefrom so long as the thrust abutment limits the frame movement to transmit the force component in the direction of the boat to the boat.

16. A support for a paddle adapted for sculling comprising a paddle clamp adapted to grip a paddle; a two-section frame means capable of providing multi-directional movement through a plurality of axes including a paddle clamp pivot axis and adapted for attachment at one section thereof to a boat to be propelled, the other section of the frame means supporting the paddle clamp with the paddle axis in an uprising direction relative to said pivot axis; and means permitting reversal of the other section of the frame to deploy the clamp with the paddle axis in a direction depending relative to said pivot axis.

17. A paddle support for securing a paddle to a boat for a sculling operation, comprising in combination a base for attachment to the stern of said boat, a frame, first pivot means pivotally mounting the frame on the base for movement about a first axis, a paddle holder, second pivot means pivotally mounting the holder on the frame for movement about a second axis normal to the first axis; the paddle holder including a paddle clamp and a third

pivot means pivotally mounting the clamp on the holder for movement about a third axis at right angles to the second axis and the first axis, means for adjusting the paddle clamp to accommodate various size paddle shafts, separate spaced apart means interposed between the clamp and holder to define spaced apart positions for the clamp for limiting the degree of clamp pivoting about the third axis through clamp to separate means to frame contact thereby compensating for adjustment of the paddle clamp to maintain equal feather angles for the various size shafts accommodated.

18. A paddle support for securing a paddle to a boat for a sculling operation, comprising in combination a base for attachment to the stern of said boat, a frame, first pivot means pivotally mounting the frame on the base for movement about a first axis, a paddle holder, second pivot means pivotally mounting the holder on the frame for movement about a second axis normal to the first axis; the paddle holder including a paddle clamp and a third pivot means pivotally mounting the clamp on the holder for movement about a third axis at right angles to the second axis and the first axis, the paddle clamp comprising a pair of opposed gripping irons hingedly connected together to define the third axis, means for adjusting the spacing between the paddle clamp irons to accommodate various size paddle shafts; said paddle holder including separate means for fixing the distance between the clamp and holder in each of two spaced apart positions, respectively lying on opposite sides of the third axis, for limiting the degree of clamp pivoting about the third axis and compensating for adjustment of the paddle clamp to maintain equal feather angles for the various size shafts accommodated.

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